Comparison of Two Diagnostic Tests Measuring Equine Serum Amyloid A Levels in Inflamed Septic and Inflamed but Nonseptic Synovial Structures

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The synovial fluid (SF) serum amyloid A (SAA) point-of-care test evaluated here can aid differentiation between inflamed but nonseptic (IBNS) and inflamed but septic (IS) synovial structures. Authors' addresses: University College Dublin Veterinary Hospital, Belfield, Dublin 4, Ireland (Stack, Steele); Clinique Vétérinaire Equine de Livet, Cour Samson, 14140 St Michel de Livet, France (Cousty); Royal (Dick) School of Veterinary Studies and The Roslin Institute, Division of Veterinary Clinical Studies, The University of Edinburgh, Hospital for Small Animals, Easter Bush Veterinary Centre, Roslin, Midlothian, EH25 9RG United Kingdom (Handel); Clinique équine de l'Ecole Nationale Vétérinaire d'Alfort, Maisons Alfort, France (Lechartier); and Mid-Atlantic Equine Medical Center, PO Box 188, 40 Frontage Road, Ringoes, NJ 08551 (David); e-mail: flo_david@hotmail.com. *Corresponding and presenting author. © 2015 AAEP.

1. Introduction

Synovial sepsis, a life-threatening condition of horses, requires prompt diagnosis. SF cytology is commonly utilized to diagnose septic synovitis; however, not all cases are clearly discernible. Laboratory analysis takes 1–3 days. A rapid, reliable, point-of-care test diagnosing synovial sepsis would expedite early intervention.

2. Materials and Methods

Each structure was diagnosed as IBNS or IS based on SF cytology (nucleated cell count, percentage neutrophils, intracellular bacteria), culture, and synovial pressure-leak testing. SF SAA levels were measured by point-of-care semi-quantitative immunochromatographic and ELISA tests, by a blinded operator. Data were analyzed by means of receiver operating characteristic curves and optimal cutoffs appointed for each test.

3. Results

Seventy-two synovial structures (62 horses) were sampled (48 IBNS and 24 IS). An optimal SAA cutoff above which the test was considered positive for sepsis, was moderate for point-of-care test and 132 μg/mL for the ELISA test. Sensitivity (0.75) and specificity (0.92) were the same for both tests. Sensitivity (0.84) and specificity (0.92) improved for both tests when structures sampled within 6 hours of onset of clinical signs were excluded. Excellent

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NOTES

correlation was observed between tests (Spearman's rank correlation of 0.96; $P < .001$).

4. Discussion

Sensitivity/specificity of SF SAA point-of-care test are very good when clinical signs of synovitis are present for more than 6 hours. This test, as an adjunct to traditional clinical methods, can assist equine practitioners to rapidly diagnose synovial sepsis.

Acknowledgments

Declaration of Ethics

The Authors declare that they have adhered to the Principles of Veterinary Medical Ethics of the AVMA.

Conflict of Interest

The Authors declare no conflicts of interest.